
Examiners' Report – A (Ch)

This paper deals with certain 1,3-dioxane derivatives depicted in formula (2), the *cis*-isomers of which show herbicidal activity.

The only prior art document (Document A) discloses said class of compounds, as well as most of the compounds explicitly mentioned in the paper and that they may be separated into the respective *cis*- and *trans*-isomers. According to document A, these compounds may be used as preservatives in aqueous compositions.

A maximum of 75 points out of 100 was awarded for independent claims.

The candidates were expected to file claims directed to

1. The use as herbicides of the *cis*-isomers of formula (2) (or of an isomer mixture containing the *cis*-compounds). Document A does not disclose this use. Only the *cis*-isomers have a considerable herbicidal effect. It was not deemed to be necessary to specify the *cis/trans* ratio in the claim. So, a claim thus restricted gained fewer marks.
2. The compound of formula (2) where the radical R^1 is methyl and the radical R^2 is phenyl. This compound is not disclosed in document A. It is described in example 1 of the paper. Its *cis*-isomer shows a very good pre-emergence herbicidal effect whilst leaving crops unimpaired (see TABLE 1 of the paper).
3. A process for making the compounds of formula (2) by reacting the aldehyde depicted by the formula $R^1\text{-CHO}$ with glycerol and reacting the product thus obtained with a compound of the formula $R^2\text{-CH}_2\text{-Y}$. As is clear from page 3 of the paper, this process yields more of the desired *cis*-isomers than the process disclosed in document A.
4. Herbicidal compositions comprising *cis*-isomers of formula (2) and other herbicides in general (especially bromoxynil and/or ioxynil). The basis for such claim(s) is found in the second para. on p. 4. Document A gives no indication to the expert that the compounds of formula (2) may be combined with (other) herbicides. The paper states that a synergistic effect is observed when the *cis*-compounds of formula (2) are combined with bromoxynil and/or ioxynil.

Where candidates produced claims of other types, which were patentable and corresponded to the subject-matter of the paper, they were given due consideration in accordance with their value.

Claims of the following types were deemed to lack novelty:

1. A claim to the *cis*-isomers of compounds of formula (2). Document A mentions that the compounds of formula (2) may be separated into the *cis*- and *trans*-isomers.
2. A claim to herbicidal compositions containing the *cis*-isomers (even if specified)
 - to contain carriers and adjuvants normally employed for agricultural applications or
 - of from 0.5 to 95 % of active ingredient, or
 - to be formulated as powders, emulsifiable concentrates or solutions).

Document A discloses in example 1 a solution of a compound of formula (2) in ether. Ether is deemed to be an adjuvant or carrier (as is acetone in example 7 of the paper).

A maximum of 15 points was awarded for dependent claims which provide good fall-back positions for the applicant. Marks were, e.g., awarded for claims covering the following features, when appended to an otherwise allowable claim:

1. Claims to the use of specific compounds especially suited for the killing of weeds in the presence of specific crops in pre-emergence or post-emergence application. The tables on pages 8 and 9 of the English version of the paper may serve as a basis for such claims. TABLE II, e.g., shows that the compounds of examples 1 and 3 are excellent post-emergence herbicides for cotton crops whereas they are not suited for corn.
2. Claims to the preferred meanings of R^1 and R^2 (see p. 2 of the English version of the paper)
3. Claims specifying that the *cis/trans* ratio is to be at least 1, preferably more than 1,5:1, more preferably more than 2:1, most preferably at least 3:1 (see the first para. on p. 4 of the English version of the paper).
4. A process claim further comprising the step of separating the isomers.
5. Formulations as powders, granules, emulsifiable concentrates or solutions containing of from 0.5 % to 95 % by weight of active ingredient.

Candidates presenting many dependent claims not offering a good fall-back position generally gained fewer points even if the expected dependent claims were filed.

A maximum of 10 points was given for the description. The prior art should have been discussed and the objective problem solved in view of the closest prior art should have been mentioned.

EXAMINATION COMMITTEE I

Candidate No.

Paper A (Chemistry) 2002 - Schedule of marks

Category	Maximum possible	Marks awarded		Marking by further examiners if any	
		Marker	Marker	Marker	Marker
Independent claims	75				
Dependent claims	15				
Description	10				
Total	100				

Sub-Committee for Chemistry agrees on marks and recommends the following grade to the Examination Board:

☐ PASS
(50-100)

☐ FAIL
(0-49)
COMPENSABLE FAIL
(45-49, in case the candidate sits
the examination for the first time)

The Hague, 23 August 2002

I. Harris - Chairman of Examination Committee I